Pay-As-You-Go (PAYG) and Mobile Money Platforms

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Introduction:

International Energy Agency (IEA) estimates that over 588 million people in sub-Saharan Africa do not have access to electricity, and that 84% of these people reside in rural areas [1].

Region	Rate of access			Population without access (million)
	National	Urban	Rural	
	2016	2016	2016	2016
WORLD	**86%**	**96%**	**73%**	**1060**
Developing Countries	**82%**	**94%**	**70%**	**1060**
Africa	**52%**	**77%**	**32%**	**588**
North Africa	100%	100%	99%	<1
Sub-Saharan Africa	43%	71%	23%	588

Table 1: Electricity Access 2016 - Regional Summary [1]

Small solar home systems (SHS) act as electrification stimulators, introducing households and individuals to the benefits of electricity with modest initial investments, while allowing them to temporally climb the energy ladder, as shown in figure 1 [2], by modifying their systems with increasing incomes and demands, and with changing technologies.

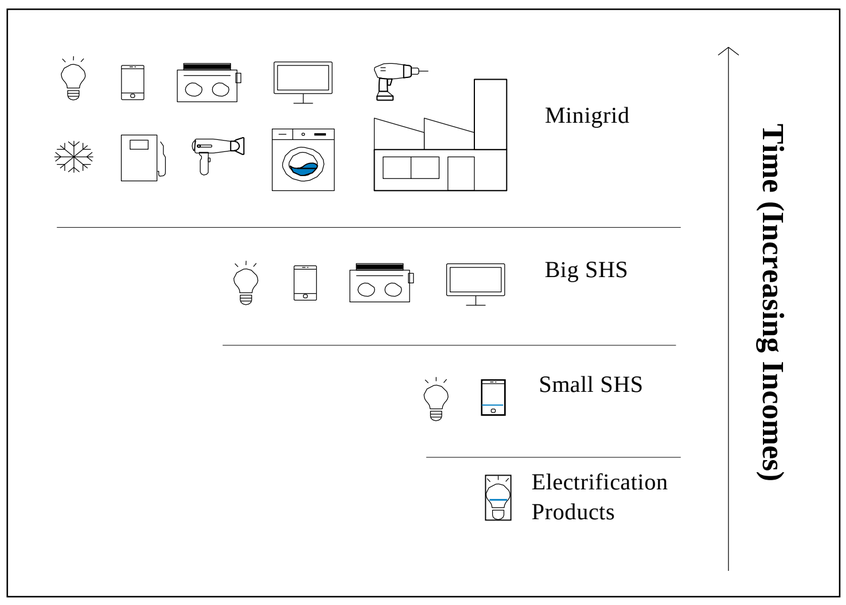

Fig 1: Energy Ladder [10]

Technology Leapfrog:

Innovative mobile money platforms have created an atmosphere of financial inclusivity, enabling people in remote rural areas to carry out financial transactions over long distances using the most basic of mobile phones, thus connecting them to the formal economy. In addition to mobile money platforms, locally designed smart meters, and satellite imagery have rapidly driven down the cost of setting up and running PV power systems and businesses. The illustration below shows how technologies boost PV business in Kenya.

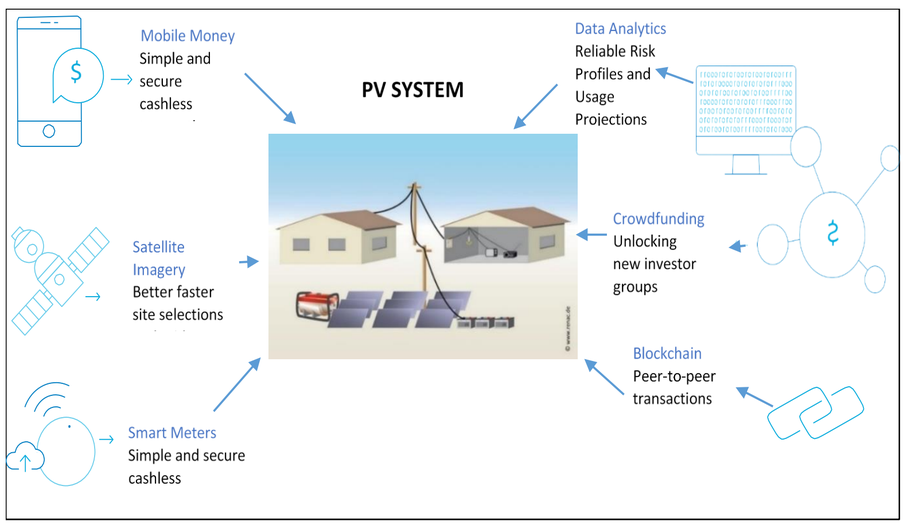

Fig. 2: Technology Leapfrog

Pay-As-You-GO (PAYG) Model:

PAYG companies combine energy products and debt services into one big system, and thus a means to consumer banking. These systems are mainly supported by mobile money platform, and thus initially found root in Eastern Africa; Kenya accounted for 30% of reported SHS sales by PAYG companies in Africa from July 2015- July 2017, with Ethiopia and Tanzania together making up another 30% [6]. Outside of Kenya, an estimated 50% of PAYG consumers opened mobile money accounts specifically to pay for electricity [4]. The main PAYG company is M-Kopa, with offered products shown in table 2 [5].

M-KOPA SYSTEMS	M-KOPA 5: 8W Panel with control unit and Lithium Battery, 4 1.2W LED bulbs, Rechargeable Torch, Rechargeable Radio, 5-in-1 Phone Charger			M-KOPA 400: 20W Panel with control unit and Lithium Battery, 3 1.2W LED bulbs, Rechargeable Torch, Rechargeable Radio, 5-in-1 Phone Charger		
	Kenya (KES)	Tanzania (TZS)	Uganda (USH)	Kenya (KES)	Tanzania (TZS)	Uganda (USH)
Deposit	2,999	49,000	119,999	7,999	69,000	300,000
Daily Charge	50	1,000	2,500	125	1,000	4,200
Total Cost	21,249	414,000	1,032,499	53,624	434,000	1,833,000
Total Cost in US$	**202**	**183**	**281**	**511**	**382**	**498**
Typical Cash Market Price (US$)	**71**			**167**		

Table 2: Main M-Koa System,s Sold in East Africa

Other PAYG companies include Azuri Technologies, Mobisol, and Off-grid Electric. Figure three shows a basic Azuri Technologies system offered in Kenyan markets [6]

Fig. 3: 10Wp Azuri Technologies Solar Home System

Conclusion:

Technology leapfrog has seen the emergence of unique business models that have stimulated PV installations, and especially in East Africa. Advancements in technology such as mobile money platforms, locally designed smart meters, satellite imagery, etc. have rapidly driven down the cost of setting up and running energy systems and businesses. Reduced business costs have in turn translated into affordable electricity for the end consumers, leading to increased connections. Innovative mobile money platforms have created an atmosphere of financial inclusivity, enabling people in remote rural areas to carry out financial transactions over long distances using the most basic of mobile phones, thus connecting them to the formal economy. In addition to creating many avenues for trade, job creation, and innovation, the mobile money platforms have also acted as catalysts for innovating energy models, access, and trade; now, most businesses involved in energy generation and trade rely on MPesa for their financial transactions. This enables remote running and operation of energy generation and management systems.

1. International Energy Agency (IEA), *World Energy Outlook,* 2018
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3. Lighting Global, *Off-Grid Solar Market Trends Report*, 2016
4. Winiecki, J., *4 Ways Energy Access Can Propel Financial Inclusion*, Blog post, 26 May http://www.cgap.org/blog/four-ways-energy-access-can-propel-financial-inclusion
5. www.m-kopa.com
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